INEEL SNF Dry Storage Project and DOE Standard Canister Status

presented to

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presented by

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INEEL SNF Dry Storage Project and DOE Standard Canister Status

1.0 Privatized SNF Dry Storage Project

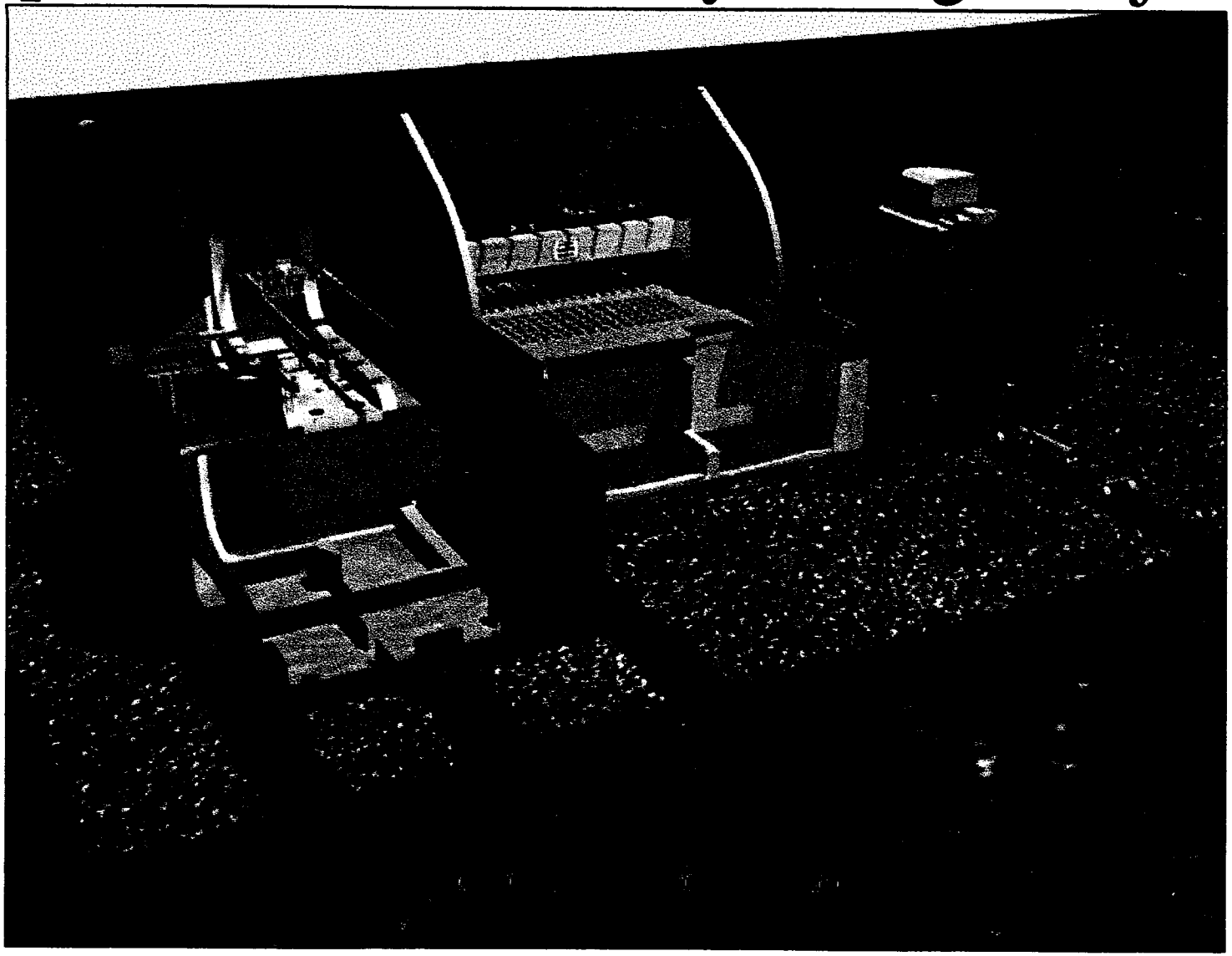
1.1 The Central Facility

The Privatized Handling and Dry Storage Facility is central to INEEL plans for preparing SNF to leave the States of Idaho and Colorado. Nearly all DOE SNF will be processed through this facility.

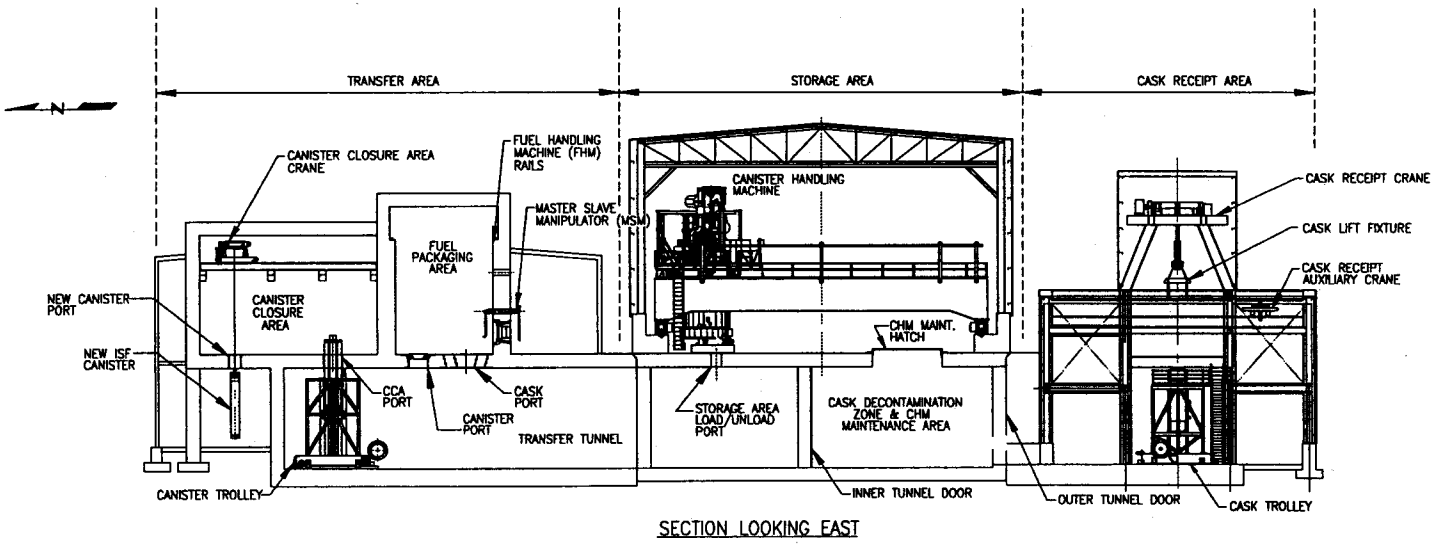
The facility will be capable of:

1. **Receiving;**
2. **Handling;**
3. **Packaging into standard canisters;**
4. **Storing; and**
5. **Shipping SNF to the geological repository.**

Spent Nuclear Fuel Dry Storage Project



SNFDSP Facility Section View



SECTION LOOKING EAST

1.0 Privatized SNF Dry Storage Project
1.2 Scope of the Contract

1. **The scope of this contract includes:**
   - **Design;**
   - **NRC Licensing;**
   - **Permitting;**
   - **Constructing; and**
   - **Operating Facility.**

2. **For the management of three specific candidate spent nuclear fuels:**
   - **LWBR;**
   - **Peach Bottom Cores 1 and 2; and**
   - **TRIGA.**

3. **The contract has options to add other fuels for processing and storage after the initial three fuels are complete.**

1.0 Privatized SNF Dry Storage Project
1.3 Contract Structure

The contract phases

- **Phase I-A is design, preparation and submittal of the NRC license application including the SAR (FFP)**
- **Phase I-B is NRC licensing (CPFF)**
- **Phase II is facility construction, operational testing and hot start-up (FFP)**
- **Phase III is Fuel Transfer and Storage (FFP)**

1.0 Privatized SNF Dry Storage Project
1.4 Project Schedule

Milestone	Dur.	FY	FY	FY	FY	FY	FY
Submit License	18			Nov. 21,			
Receive	20				July 24,		
Start						Feb. 2,	
Complete (Phase	17						June 29,
Start (Phase	1						June 30
Total	6						

* Represents the number of months from the previous activity (i.e., the duration required to

1.0 Privatized SNF Dry Storage Project
1.5 Procurement History

1. Major Procurement Events

- 12/92 Initial Feasibility Studies published.
- 11/94 Second Short Data Form submitted requesting 1998 LICP funding.
- 03/96 Mission Need Document for SNF DS Project.
- 06/96 Project validated as a 1998 LICP.
- 01/97 DOE redefines acquisition strategy from standard LICP to a privatization procurement.
- 01/99 DOE releases RFP.
- 05/00 DOE awards contract to Foster Wheeler.
- 11/01 The license application was submitted to the NRC.
- 03/02 The NRC accepted the license application for formal review.

1.0 Privatized SNF Dry Storage Project
1.5 Procurement History (Continued)

2. Major Reviews

• 06/94	Feasibility Study SNF DSP	Fluor Daniel
• 04/96	Feasibility Study SNF DPC	Fluor Daniel
• 06/96	Feasibility Study SNF DMS	Fluor Daniel
• 07/96	Conceptual Design Report	INEEL M&O
• 02/97	Independent Review of CDR	Fluor Daniel
• 08/97	Privatization Action Plan	EM HQ Review
• 03/98	Independent Cost Estimate 1	US ACE
• 06/98	Value Engineering Study	US ACE
• 09/98	Readiness Review Report	Lockwood Green
• 07/99	Independent Cost Estimate 2	US ACE
• 02/00	Project Audit	DOE-IG

1.0 Privatized SNF Dry Storage Project
1.6 Project End Goals

1. **Conclude the terms of current contract: package three fuel types and place in facility dry storage.**

2. **Evaluate contract: continue with FW or transfer ownership and license to DOE.**

3. **Evaluate facility capabilities for remainder of SNF (throughput and other capabilities; dry storage capacity; lag storage; add rail spur).**

4. **Process additional SNF through facility and prepare for shipping to geological repository and meet Idaho Settlement Agreement milestone date of 01/01/35. (HLW may also be copackaged with SNF and shipped out through this facility.)**

1.0 Privatized SNF Dry Storage Project
1.7 Planning Assumptions

1. **This facility is the focal point for meeting the terms of the Settlement Agreement and DOE's national obligations.**

2. **Repackaging must be almost continuous from 2005-2035 to meet the Idaho Settlement Agreement.**

3. **The INEEL will exhaust available dry storage by 2009.**

4. **The State of Idaho will not prevent receipt of domestic and foreign SNF shipments.**

5. **DOE-ID is supporting a 2015 operational date for the National SNF Repository.**

6. **Should the National SNF Repository open earlier – DOE-ID will be well placed to support an earlier operational date.**

1.0 Privatized SNF Dry Storage Project

1.8 Project Status

- License Application submitted to NRC on November 19, 2001, ahead of schedule.
- Foster Wheeler held formal meeting with NRC in December to present License Application overview.
- The NRC accepted the license application for formal review on 03/14/02.
- Authorization of payment for successful completion of Phase IA activities ($61M) has been made.
- Design and permitting tasks continuing.
- BBWI continuing development of shipping configurations.
- EM-1 comments being incorporated in the PEP.
- Preliminary designs complete by 09/02.
- NRC license acceptance expected 02/04.

1.0 Privatized SNF Dry Storage Project
1.9 Project Issues

1. Peach Bottom Cask and Shipping Information

Issue: Foster Wheeler has requested specific fuel shipment configurations and detail on Peach Bottom Casks. Some design, safety documentation and transfer plans for the fuel transfers from DOE to Foster Wheeler must still be developed.

Resolution: DOE is working with BBWI and Foster Wheeler to develop all necessary information. Foster Wheeler has included commitments for completion of this information in their license application. This information will be necessary to respond to anticipated RAIs.

1.0 Privatized SNF Dry Storage Project
1.9 Project Issues

2. LWBR Change

Issue: Use of estimated LWBR heat load value resulted in storage design which would not accommodate some LWBR fuel.

Resolution: To minimize potential project impacts, DOE requested problem LWBR seed and blanket fuel to be removed from the contract scope. Administrative contract change process is continuing. DCAA audit process is underway.

1.0 Privatized SNF Dry Storage Project
1.10 Summary

On-time construction and operation of this facility will:

1. **Provide appropriate and adequate management of all SNF within the INEEL.**

2. **Provide the capability to receive all SNF types within the DOE complex.**

3. **Provide adequate safe dry storage for all INEEL SNF receipts (regardless of the operational date of the National SNF Repository).**

1.0 Privatized SNF Dry Storage Project
1.10 Summary (Continued)

4. **Provide loadout capability to the INEEL's EM and ANL-W/NE HLW programs.**

5. **Provide reduced costs for SNF management (dry storage is > 4 times more cost efficient per MTHM).**

5. **Answer the INEEL's national responsibilities by appropriately and adequately receiving, storing, and managing SNF from:**
    a) **31 domestic shippers; and**
    b) **b) 18 foreign shippers.**

1.0 Privatized SNF Dry Storage Project
1.10 Summary (Continued)

6. **Protect the INEEL's reciprocity agreements with other states. The DOE-ID currently plans to make approximately 183 truck shipments of SNF and nuclear material to other sites: a) 28 to the Oak Ridge Reservation -TN, and b) 155 to the Savannah River Site - SC.**

7. **Answer the INEEL's international responsibilities with regard to the national non-proliferation policy as established under the DOE NWNpP CFRR SNF FEIS (05/96).**

8. **Provide successful completion of: a) Idaho Settlement Agreement commitments; and b) Colorado Agreement commitments.**

1.0 Privatized SNF Dry Storage Project
1.10 Summary (Continued)

Note impacts to domestic and foreign clients:

- **<u>The effects of any delay are likely permanent</u> (as the number of shipments per year is limited under the Settlement Agreement, the INEEL could not regain its receipt schedule).**
- **<u>Increased costs to these clients</u> (current and new storage, oversight, maintenance, safeguard & security elements, and associated compensatory measures imposed during the suspension of receipts).**
- **<u>Shutdown of facilities is prevented</u>. Eleven clients have indicated facilities will be shut down upon transfer of SNF, and 7 more have indicated a desire to do so.**
- **<u>The NRC requires timely defueling of reactors upon shutdown.</u>**

2.0 DOE Standard Canister

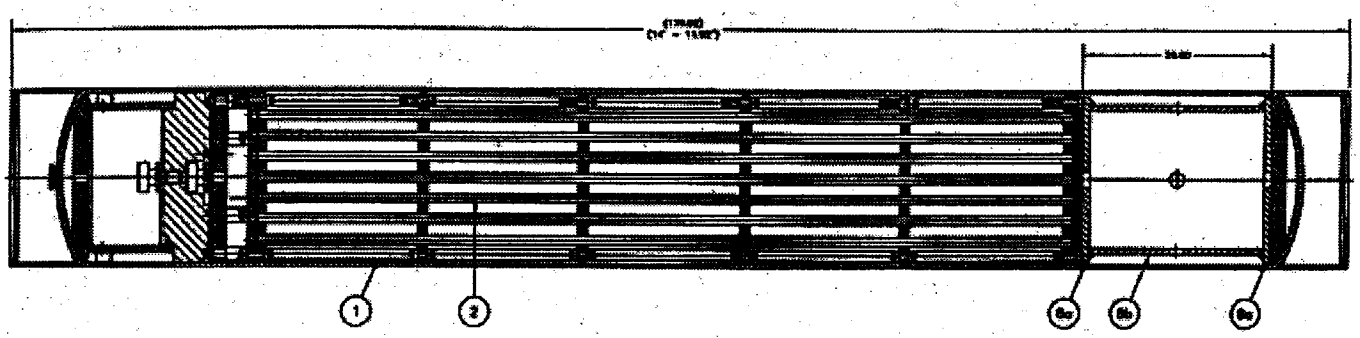
2.1 Purpose

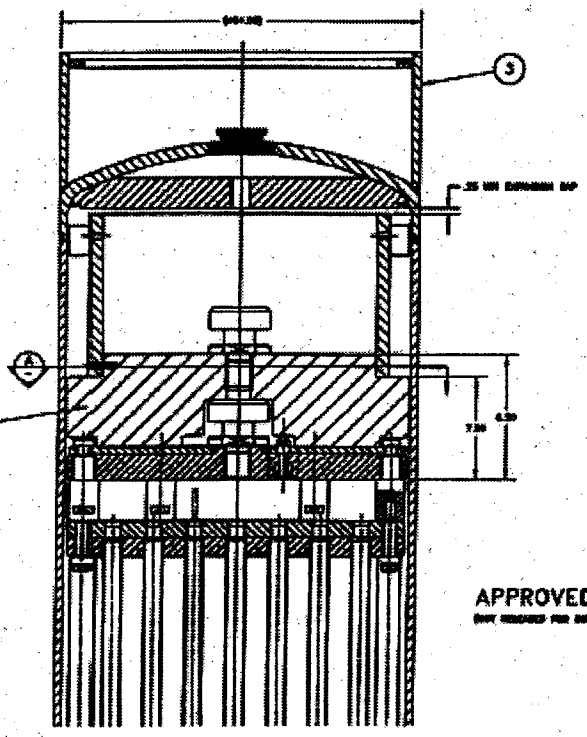
The standardized canister will:

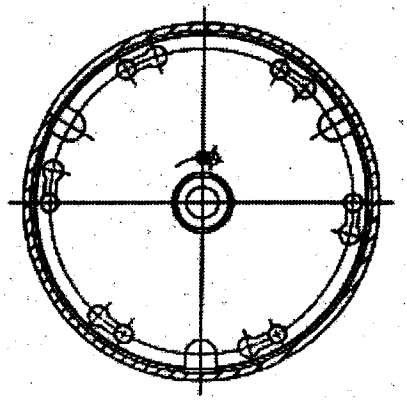
- **Provide a safe storage package (resistant to credible accident scenarios) for all SNF types and conditions,**
- **A single management configuration for efficient handling, storage and transportation at the sending and receiving locations,**
- **By virtue of its robust design, reduce the need for extensive characterization of contents, currently plaguing the TRU program, and**
- **Meet the requirements of paragraph F.4 of the Idaho Settlement Agreement requiring that "DOE and the Navy shall employ Multi-Purpose Canisters (MPCs) or comparable systems to prepare spent fuel located at the INEL for shipment and ultimate disposal of such fuel outside Idaho;" and that "The Record of Decision on the NEPA analysis shall be completed by April 30, 1999."***

***Record of Decision published as 64 FR 23825 – May 4, 1999.**

DOE STANDARD CANSIER FOR THE ISF PROJECT







SECTION

APPROVED

SEE SEPARATE PARTS LIST ISF-ME-S-P-11087

ALSTEC LTD

IDAHO SPENT FUEL PROJECT

FOSTER WHEELER ENVIRONMENTAL CORPORATION

SHIPPINGPORT REFLECTOR RODS CANISTER/BASKET LAYOUT

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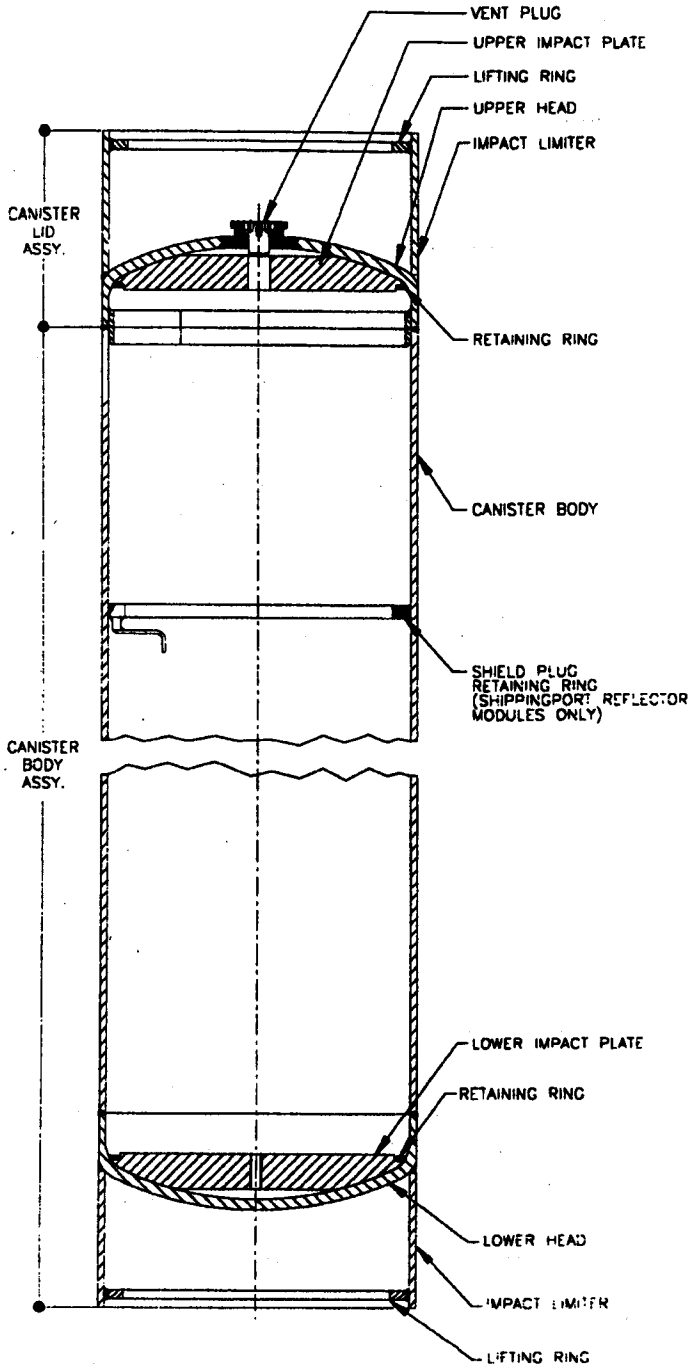
FIGURE 4.2-15
ISF Canister



2.0 DOE Standard Canister

2.2 Background

April 1993	**The Office of Spent Fuel and Special Projects created to create and carry out the national SNF program.**
April 1993	**First DOE SNF Workshop convened.**
May 1995	**DOE SNF EIS promulgated.**
Oct 1995	**Idaho Settlement Agreement is achieved.**
Oct 1995	**EM-1 designated the INEEL as "the lead site laboratory for management of DOE's SNF."**

2.0 DOE Standard Canister

2.2 Background (Continued)

June 1996 — **RRSNF Task Team published: *Technical Strategy for the Treatment, Packaging, and Disposal of Aluminum-Based SNF.***

- **Comprised of EM multi-site, NR, and OCRWM representation.**
- **Evaluated 11 SNF management options.**
- **Recommended direct co-disposal of SNF with HLW in uniform, or standard canister as the simplest and most cost effective method of management.**

2.0 DOE Standard Canister

2.2 Background (Continued)

March 1997 — **The INEEL SNF Task Team published:** ***Technical Strategy for the Mangement of INEEL SNF.***

- **Comprised of EM multi-site, ANL-W, and OCRWM representation.**
- **Evaluated INEEL SNF types, facilities, constraints. Devised a path forward.**
- **Recommended "development of standard canister designs suitable for disposal of HEU and MEU fuel."**

Sept 1998 — **EM and OCRWM sign a Memorandum of Agreement establishing roles and responsibilities WRT SNF and the design and use of a DOE standard canister.**

2.0 DOE Standard Canister

2.2 Background (Continued)

March 1999 — **In response to Idaho Settlement Agreement paragraph F.4, INEEL publishes the NEPA analyses: *Supplement Analysis for a Container System for the Management of DOE Spent Nuclear Fuel Located at the INEEL.***

April 1999 — **DOE issues the Record of Decision, wherein it is determined that the INEEL shall use Multi-Purpose Canisters ("MPCs") or comparable systems to prepare spent fuel located at INEL for shipment and ultimate disposal of such fuel outside Idaho. This MPC is described as a standard canister.**

2.0 DOE Standard Canister

2.3 Status

1. **The 90% design review is scheduled for 05/22/02.**

2. **FWENC has recommended several modifications to the preliminary design performed by the NSNFP team:**
   - **Head design,**
   - **Canister plug,**
   - **Added support to the impact plate internal to the canister, and**
   - **Added backing ring to the point of attachment (weld) of the head to the body.**

3. **FWENC has requested changes to ASME codes to allow the canister to be end stamped for transportation and storage purposes.**

2.0 DOE Standard Canister

2.4 Issue

DOE Standard Canister Design Change Request

Issue: Design process has resulted in Foster Wheeler requesting changes to some canister design parameters, and clarifications to ASME codes.

Resolution: Resolution of the ASME transportation code issue was pursued through a code case developed by the INEEL and coordinated with Foster Wheeler. The ASME Committee approved the code case in January 2002. Final publication is pending. Discussions to resolve Foster Wheeler's desired changes to the canister design and fabrication continue.